

Defendants.

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Civil Action No. 2:09-cv-00290-NBF

**PLAINTIFF CARNEGIE MELLON UNIVERSITY’S BRIEF IN OPPOSITION
TO MARVELL’S MOTION FOR JUDGMENT AS A MATTER OF LAW ON
INVALIDITY (DKT. 747)**

I. INTRODUCTION

The Court should deny Marvell's Motion for Judgment as a Matter of Law on Invalidity. Marvell has fallen well short of its burden of proving, through clear and convincing evidence, that claim 4 of the '839 patent and claim 2 of the '180 patent are anticipated or obvious. Marvell's invalidity defense is based on the testimony of Dr. Proakis. As shown in CMU's motion for judgment as a matter of law on invalidity, Dr. Proakis' testimony does not satisfy Marvell's burden because: (1) Dr. Proakis twice admitted that U.S. Patent No. 6,282,251 (the "Worstell patent") (Ex. DX-187) does not anticipate the asserted claims of the CMU patents; and (2) his obviousness analysis consists solely of conclusory statements contradicted by Dr. McLaughlin, and he failed to take into account the extensive evidence—presented to the jury—regarding secondary considerations. The Court should deny Marvell's motion, and it should grant CMU's motion for judgment as a matter of law that no reasonable jury could rule in Marvell's failure on its invalidity defenses.

II. LEGAL STANDARD

Rule 50(a) provides that:

*If during a trial by jury a party has been fully heard on an issue and **there is no legally sufficient evidentiary basis** for a reasonable jury to find for that party on that issue, the court may determine the issue against that party and may grant a motion for judgment as a matter of law against that party with respect to a claim or defense that cannot under the controlling law be maintained or defeated without a favorable finding on that issue.*

Fed.R.Civ.P. 50(a)(1) (emphasis added). Third Circuit (rather than Federal Circuit) authority governs this Court's "denial or grant of a motion for JMOL." *Agrizap, Inc. v. Woodstream Corp.*, 520 F.3d 1337, 1341 (Fed. Cir. 2008). The Federal Circuit—applying Third Circuit law and echoing Rule 50(a)—has held that "a grant of JMOL is appropriate **only** where a party has been fully heard on an issue during a jury trial and the court finds that a reasonable jury would not have a legally sufficient evidentiary basis to find for the party on that issue." *Id.* at 1342

(citing Fed. R. Civ. P. 50(a)) (emphasis added); *see also Rothman v. Target Corp.*, 556 F.3d 1310, 1316 (Fed. Cir. 2009) (same). When determining whether a “legally sufficient evidentiary basis” exists, the Court “may **not** weigh the evidence, determine the credibility of witnesses, or substitute [its] version of the facts for the jury’s version.” *Agrizap*, 620 F.3d at 1342 (quoting *Lightning Lube, Inc. v. Witco Corp.*, 4 F.3d 1153, 1166 (3d Cir. 1993)) (emphasis added).

Judgment as a matter of law “should be granted only if, viewing all the evidence which has been tendered and should have been admitted in the light most favorable to the party opposing the motion, no jury could decide in that party’s favor.” *Walter v. Holiday Inns, Inc.*, 985 F.2d 1232, 1238 (3d Cir. 1993) (internal citation omitted). Judgment as a matter of law cannot be granted . . . if reasonable minds could differ as to the import of the evidence. *See Nobelpharma AB v. Implant Innovations, Inc.*, 141 F.3d 1059, 1064 (Fed. Cir. 1998) (“We may affirm only if the judgment entered was the only one possible under the controlling law.”) (citing *Burroughs Wellcome Co. v. Barr Lab., Inc.*, 40 F.3d 1223, 1227, (Fed. Cir. 1994)); *see also Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 250, (1986) (prohibiting JMOL “[i]f reasonable minds could differ as to the import of the evidence.”).

In the context of anticipation and obviousness defenses, the Federal Circuit has held that a defendant’s motion for judgment as a matter of law **should be denied** when, as here, the plaintiff’s expert offered testimony that the prior art did not teach or suggest an element and when there is evidence of secondary considerations of non-obviousness. *Pressure Prods. Med. Supplies v. Greatbatch Ltd.*, 599 F.3d 1308, 1318-19 (Fed. Cir. 2010) (“In sum, the trial record shows ample support for the jury’s judgment that the claimed invention would not have been anticipated or rendered obvious by prior art at the time of invention.”). The Federal Circuit noted that it “‘has repeatedly explained, [that secondary consideration evidence] is not just a

cumulative or confirmatory part of the obviousness calculus but constitutes independent evidence of nonobviousness.” *Id.* (quoting *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008)).

III. ARGUMENT

A. Marvell Has Failed To Establish Worstell Anticipates the Asserted Claims

1. Dr. Proakis Is Bound By His Opinion—Presented to the Jury During Cross-Examination—That Worstell Does Not Disclose Selection of a Branch Metric Function

Dr. Proakis has conceded, and the Court has held that he is bound by his concession that, at the very least, the Worstell patent does not disclose a set of signal dependent branch metric functions. Accordingly, Marvell cannot prove by clear and convincing evidence that the Worstell patent discloses the “selecting” step in claim 4 of the ‘839 patent and claim 2 of the ‘180 patent.

Dr. Proakis’ expert report, at ¶ 34, incorporates by reference a declaration he submitted, under penalty of perjury on November 2, 2011:

34. I previously discussed the interpretation of the word “function” in my Declaration filed on November 2, 2011, Dkt. No. 318-3. I incorporate that discussion by reference.

Proakis Report ¶ 34. In that declaration, Dr. Proakis applied the Court’s construction of the term “function” which is “a mathematical relation that uniquely associates members of a first set with members of a second set.” Proakis Decl. ¶ 15, Dkt. 318-3 (applying the Court’s construction of function). He also applied the agreed construction of the term “selecting” which means “to choose one from a set of more than one.” Proakis Decl. ¶ 20.

In particular, Dr. Proakis opined that “[b]ased on the Court’s construction of ‘function,’ Worstell’s ‘further modified’ branch metric is a *single branch metric function* and not a ‘set’ of *branch metric functions*.”

34. Based on the Court's construction of "function," Worstell's "further modified" branch metric is a "single" branch metric function and not a "set" of branch metric functions.

Proakis Decl. ¶ 34. Dr. Proakis further testified in his declaration that, if Worstell does not disclose a set of functions, it does not disclose the “selecting” step taught by claim 4 of the ‘839 patent and claim 2 of the ‘180 patent. *Id.* ¶ 20.

At trial, however, Dr. Proakis testified that Worstell does disclose a “set of branch metric functions.” Tr. 12/17/12 at 67:9 – 67:20 (“the selecting step requires that there be a set of branch metric functions from which we select in order to take into account signal dependent noise. And that part, that element of this claim is actually disclosed at these Bs; the branch metrics are, in fact, set because these sigmas here are different for different branches.”).

As the Court ruled during the side bar conference, Dr. Proakis and Marvell are “bound by the position [Marvell] took in front of the Court.” Tr. 12/17/12 at 111; *see also Pritchard v. Dow Agro Scis.*, 263 F.R.D. 277, 284-85 (W.D. Pa. 2009) (Fischer, J.) (“[N]ew opinions or information which is contradictory to that set forth in the expert report” should be stricken); *Jarrow Formulas, Inc. v. NOW Health Group, Inc.*, 2012 WL 3186576, at *16 (C.D. Cal. Aug. 2, 2012); *Rembrandt Vision Techs., L.P. v. Johnson & Johnson Vision Care, Inc.*, 282 F.R.D. 655, 665 (M.D. Fla. 2012). *See generally* Dkt. 717 at 7-11 (discussing authority prohibiting testimony of changed opinions and requiring such testimony to be stricken unless Marvell demonstrates a lack of prejudice to CMU).

Because Dr. Proakis' sworn declaration, and his expert report, indicate that Worstell does not disclose a set of signal dependent branch metric functions, it does not disclose the "selecting" step in claim 4 of the '839 patent and claim 2 of the '180 patent. Federal Rules of Civil Procedure 26 and 37, and the Court's orders, prohibit Dr. Proakis from changing his testimony at this late date. At a minimum, the jury is entitled to consider and agree with the opinion Dr. Proakis' expressed in his sworn statement and report that Worstell does not disclose a set of functions. Tr. 12/17/12 at 89-91. Accordingly, Marvell cannot prove that no reasonably jury could conclude that Worstell fails to disclose a set of functions.

2. Dr. McLaughlin Demonstrated that Worstell Does Not Disclose Selection of a Branch Metric Function

Dr. McLaughlin's rebuttal testimony—like the binding concession Dr. Proakis' expert report—demonstrates that Worstell, at a minimum, does not disclose "a set of signal-dependent branch metric functions," and it therefore does not disclose "selecting a branch metric function for each of the branches" Tr. 12/18/12 at 55. ("[B]oth of the claims under consideration here, require a set of signal-dependent branch metric functions and Worstell only contemplates one."). Dr. McLaughlin demonstrated—using slides that Dr. Kavcic prepared—that there are "different FIR filters on different branches according to his invention." Tr. 12/18/12 at 64 (citing P-Demo (3) at 59. He contrasted that with the Worstell invention, which involves "one FIR filter," and which was one of the solutions Dr. Kavcic considered and "gave up on." *Id.* (citing P-Demo (3) at 44. Dr. McLaughlin then showed that equation 20 in the Worstell patent discloses a single FIR filter. *Id.* at 65. Dr. McLaughlin then explained, in detail, the manner in which the Worstell's invention is "constant for all the one branches," *id.* at 67, and fails to "describe a set of signal dependent branch metric function." *Id.* at 68 (discussing, among other things, slides 12-14 of Dr. Proakis' demonstratives). Accordingly, Marvell is simply wrong in its assertion

that no reasonable jury could conclude that Worstell fails to disclose a set of signal-dependent branch metric functions.¹

3. Dr. Proakis Admitted, and Dr. McLaughlin Confirmed, That Worstell Fails To Disclose Selection and Application of a Function to a Plurality of Signal Samples to Determine the Metric Value for Each Branch

During cross-examination, CMU asked Dr. Proakis about a demonstrative slide he prepared showing the disparate way in which the Worstell patent treats the “blue” or transition branches and the “orange” or non-transition branches. Tr. 12/17/12 at 92-93 (addressing “D Demo 12-15”). Dr. Proakis testified that the transition branches can be called “the one branches,” and the non-transition branches can be called the “zero branches.” *Id.* at 93. Dr. Proakis then admitted that the Worstell patent teaches only modifying “the one branches” with the transition noise adjustment. *Id.*²

Based on this view of Worstell, Dr. Proakis repeatedly conceded, on cross-examination, that the Worstell patent does not disclose application of anything to the “zero branches.” *Id.* at 94. For example, when asked on multiple occasions whether Worstell teaches anything about the zero branches, Dr. Proakis testified that it would be “obvious” to apply a multiplier to the zero branches. *Id.* at 94:5-7, *id.* at 94:15-17; *id.* at 94:24-95:1; *id.* at 95:6-9. As Dr. Proakis knows, referring to a missing limitation as “obvious” is an admission that the particular limitation is not disclosed in the cited art. Accordingly, Dr. Proakis’ testimony establishes, as a matter of law, that Worstell does not disclose selecting a branch metric function from a set of signal-dependent

¹ In fact, as CMU showed in its motion for judgment of law on Marvell’s invalidity defenses, no reasonable jury could conclude that Worstell does disclose this limitation. Accordingly, CMU is entitled to judgment as a matter of law.

² Marvell argues that the deficiencies in Dr. Proakis’ opinions are overcome by “admissions” that Dr. McLaughlin made. Marvell does not actually cite to any of Dr. McLaughlin’s rebuttal testimony. Instead, Marvell relies on Dr. Proakis’ demonstrably incorrect characterization of Dr. McLaughlin’s testimony. Such characterization is not evidence, and it falls well short of meeting Marvell’s burden of showing that no reasonable jury could conclude that Marvell failed to prove invalidity by clear and convincing evidence.

branch metric functions as required by claim 4 of the '839 patent and claim 2 of the '180 patent.

Dr. Proakis' concession was confirmed by Dr. McLaughlin's testimony likewise showing that Worstell "makes no mention of what happens to the other branches, . . . the zero branches." Tr. 12/18/12 at 67. Dr. McLaughlin testified that Dr. Proakis' testimony was based on "a made-up equation" that "doesn't appear in the patent." *Id.* at 68.

Further, Dr. McLaughlin already had demonstrated that there is "nothing applied for the zero branches." *Id.* Dr. McLaughlin also showed that Dr. Proakis' testimony depended upon performing operations "exactly opposite as to how Worstell describes his invention," and as a result, his analysis is "not applicable." *Id.* at 69-70.

Finally, and independent of the foregoing, Dr. McLaughlin also testified that Worstell does not make any disclosure of applying any signal dependent branch metric any function "to a plurality of signal samples," *id.* at 70, which is required of both asserted claims.

Because anticipation requires disclosure of every claim element, Marvell's anticipation defense fails and no reasonable jury could find Marvell has established invalidity by anticipation by clear and convincing evidence.

B. Dr. Proakis Applied the Incorrect Claim Construction

The Court construed the term "signal-dependent branch metric function" as "a 'branch metric function' that accounts for *the* signal-dependent *structure* of the media noise." Dkt. 176, at 2 (emphasis added). "Signal-dependent noise" was construed to mean "media noise in the readback signal whose noise structure is attributable to a specific sequence of symbols (e.g., written symbols)." *Id.* Thus, a signal-dependent branch metric function must account for the media noise in the readback signal whose noise structure is attributable to a specific sequence of (written) symbols. Dr. Proakis did not apply that construction. Instead, he simply looked at

whether Worstell's further modified metric "take[s] into account signal dependent noise." Tr. 12/17/12 at 54. Dr. Proakis repeated the error even after he testified that he was applying the Court's claim constructions. *Id.* at 67. He had made the same error for correlated noise. *Id.* There is a significant difference between the claim requirements of claim 4 and claim 2 of the CMU patents, on the one hand, whose signal dependent branch metric functions account for the media noise in the readback signal whose noise structure is attributable to a *specific sequence* of (written) symbols, and an invention, on the other hand, that merely "take[s] into account" that noise.

It is well established that the Court must "disregard the testimony of [an] expert . . . based on an incorrect understanding of the claim construction." *Cordis Corp. v. Boston Scientific Corp.*, 658 F.3d 1347, 1357-58 (Fed. Cir. 2011) (affirming the District Court's grant of JMOL based on an expert's testimony when that testimony was based on a faulty understanding of the Court's claim construction); *see also TI Group Automotive Systems, NA, Inc. v. VDO North America, LLC*, 2002 WL 31051602 at *4, *9 (D. Del. Sept. 4, 2002) (setting aside jury verdict because expert testified using construction of claim language that had been advanced earlier and that the District Court had not adopted); *DataTreasury Corp. v. Wells Fargo & Co.*, 2010 WL 5140732 at *6 (E.D. Tex. Sept. 27, 2010) (granting judgment as a matter of law because the only evidence in support of the jury's verdict was expert testimony that was "outside of the Court's claim construction and thus as a matter of law cannot support the jury's finding . . .").

C. **Dr. Proakis' Obviousness Opinion Is Insufficient To Meet Marvell's Burden Because It is Wholly Conclusory and Fails To Consider Secondary Considerations of Nonobviousness**

1. Dr. Proakis' Obviousness Cannot Meet Marvell's Burden Because it is Wholly Conclusory

The Federal Circuit repeatedly has held that conclusory expert testimony, of the type Dr. Proakis provided, is not sufficient to support an obviousness defense: “At this critical point in the determination of obviousness, there must be factual support for an expert’s conclusory opinion.” *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000) (citing *Motorola, Inc. v. Interdigital Technology Corp.*, 121 F.3d 1461, 1473 (Fed.Cir.1997); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed.Cir.1985)). The Federal Circuit requires experts to articulate the reasoning for their obviousness conclusion and provide a specific factual basis. *Id.*; see also *Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1373 (Fed. Cir. 2008) (“T]here must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”); *NTP*, 418 F.3d at 1325 (affirming JMOL on validity where the expert’s conclusory testimony was “hardly enough to meet [defendant’s] high burden of clear and convincing evidence with respect to anticipation and obviousness”); *ActiveVideo*, 694 F.3d at 1327 (expert “never provided any factual basis for his assertions.”).

The Federal Circuit recently affirmed JMOL of nonobviousness where the expert’s opinions on that point were conclusory and factually unsupported:

The expert failed to explain how specific references could be combined, which combination(s) of elements in specific references would yield a predictable result, or how any specific combination would operate or read on the asserted claims. ***Rather, the expert’s testimony on obviousness was essentially a conclusory statement that a person of ordinary skill in the art would have known***, based on the . . . nature of the claimed components, how to combine any of a number of references to achieve the claimed inventions. This is not sufficient and is fraught with hindsight bias.

ActiveVideo, 694 F.3d at 1327. Similarly, in *Upjohn*, the expert summarily testified that a PHOSITA would know to use the missing element, but the court found no evidence in the record to support that statement and ultimately held that there was “not substantial evidence to support

the findings necessary to sustain a verdict of obviousness.” *Id.* at 1311-12 (“The record does not contain substantial evidence in support of [the expert’s] conclusion that it would have been obvious to make this change. . . .”). In *Innogenetics*, the Federal Circuit again found an expert’s list of prior art references and conclusion that “to one skilled in the art it would have been obvious” was deficient. 512 F.3d at 1373. The Federal Circuit noted that the *Innogenetics* expert failed to explain how or why a PHOSITA would have found the claims obvious and warned that “[s]uch vague testimony would not have been helpful to a lay jury in avoiding the pitfalls of hindsight that belie a determination of obviousness.” *Id.* (citing *Graham v. John Deere Co.*, 383 U.S. 1, 36 (1966)).

As discussed above, and in CMU’s motion for judgment as a matter of law regarding validity, the jury can and should conclude that Dr. Proakis conceded that the Worstell reference does not disclose any “transition noise adjustment multiplier” on the non-transitional or “zero” branches. Tr. 12/17/12 at 94:1 – 95:17 Dr. Proakis’ obviousness conclusion is based solely on his conclusory statement that it would have been obvious to a PHOSITA to perform some undisclosed processing on those non-transitional “zero” branches. *Id.* at 94:7-94:8 (“***That is obvious, Mr. Greenswag. That is totally obvious to a person skilled in the art.*** There are 16 branches there, and a person skilled in the art would look at that and say, okay, I’ve got -- eight of these branches have to be scaled by a sigma one squared and the other eight have to be scaled by a sigma two squared.”); 94:17 – 94:23; 95:6 - 95:9; *see also id.* at 77:12 (“It’s obvious to a person of ordinary skill in the art.”).

Dr. Proakis did not, however, identify *how* or *why* a PHOSITA, reading Worstell, would know or be motivated to apply such a multiplication to the non-transitional “zero” branches. He also failed to identify any references teaching what these functions would be, let alone identify

where in the prior art a PHOSITA would have looked.³ This testimony falls far short of what is required to establish obviousness because Dr. Proakis failed to analyze the *Graham* framework or provide any “reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 401 (2007); *Graham*, 383 U.S. at 17 (“Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved.”); *see also Innogenetics*, 512 F.3d at 1373 (“Knowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references to reach the particular claimed method.”).

Dr. Proakis’ conclusory obviousness opinions fail as a matter of law. At a minimum, however, the jury is entitled to disbelieve them in the face of contrary opinions of Dr. McLaughlin. Dr. McLaughlin testified at length that the CMU patents represent a new and novel solution for solving the problem of correlated noise and demonstrating that Worstell was a failed earlier attempt to solve that problem. Tr. 12/18/12 at 52-56; *id.* at 64, 69-72 (explaining differences between the asserted claims and prior art and relying on Worstell’s email contrasting the invention with prior art). Indeed, Dr. McLaughlin specifically and repeatedly refuted Dr. Proakis’ conclusory statement that the asserted claims were merely obvious combinations of prior art. *Id.*

2. Dr. Proakis Completely Failed To Take Into Account Secondary Considerations of Non-Obviousness

The Federal Circuit “has repeatedly explained, [that secondary consideration evidence] is not just a cumulative or confirmatory part of the obviousness calculus but constitutes

³ In his deposition, Dr. Proakis expressly disclaimed the use of any combination of prior art in support of his obviousness analysis. *See* Dkt. 498 at 4.

independent evidence of nonobviousness.” *Pressure Prods.*, 599 F.3d at 1318-19 (quoting *Ortho-McNeil Pharm.*, 520 F.3d at 1365). As Dr. McLaughlin testified, Dr. Proakis did not discuss any secondary considerations. Tr. 12/18/12 at 72. In contrast, Dr. McLaughlin provided detailed testimony and cited exhibits showing several secondary considerations demonstrating the asserted claims are not obvious. Relying on his prior testimony, and the jury’s consideration of evidence it previously heard regarding praise for Dr. Kavcic’s invention—such as Marvell’s repeated reference to it as the “optimal” solution, its statement that the Kavcic invention is the “gold standard,” and Mr. Burd’s testimony that Kavcic is a VIP that all would want to cite—Dr. McLaughlin more than established “praise for the invention” and the fact that it solved a “long-standing problem.” *Id.* at 72.

Furthermore, Dr. McLaughlin explicitly relied on the email from Glen Worstell sent after he had reviewed the CMU invention disclosure. Mr. Worstell states: “A couple of years ago I did some work on a Viterbi detector modification to account for noise correlation. ***This invention is related but goes beyond my work and is probably more interesting.***” PX-161; Tr. 12/17/12 at 97:16- 98:25 (testifying that he had seen the previously seen the email but didn’t remember discussing it).

In sum, the secondary consideration evidence and opinions Dr. McLaughlin expressed precludes judgment as a matter of law. ” *Pressure Prods.*, 599 F.3d at 1318-19.

IV. CONCLUSION

For the foregoing reasons, CMU respectfully requests that the Court deny Marvell’s Motion for Judgment as a Matter of Law of Invalidity.

Respectfully submitted,

Dated: December 19, 2012

/s/ Christopher M. Verdini

Patrick J. McElhinny Pa. I.D. # 53510

patrick.mcelhinny@klgates.com

Mark Knedeisen Pa. I.D. #82489

mark.knadeisen@klgates.com

Christopher M. Verdini Pa. I.D. # 93245

christopher.verdini@klgates.com

K&L Gates LLP

K&L Gates Center

210 Sixth Avenue

Pittsburgh, PA 15222

Phone: (412) 355-6500

Douglas B. Greenswag (admitted *pro hac vice*)

douglas.greenswag@klgates.com

925 Fourth Avenue, Suite 2900

K&L Gates LLP

Seattle, WA 98104-1158

Phone: 206.623.7580

Counsel for Plaintiff, Carnegie Mellon University

CERTIFICATE OF SERVICE

I hereby certify that on December 19, 2012 the foregoing was filed electronically. Notice of this filing will be sent to all parties by operation of the Court's electronic filing system.

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s/ Christopher M. Verdini
Christopher M. Verdini, Pa. I.D. # 93245
christopher.verdini@klgates.com
K&L GATES LLP
K&L Gates Center
210 Sixth Avenue
Pittsburgh, PA 15222
Phone: 412.355.6500
Fax: 412.355.6501